



## PIER Energy-Related Environmental Research

Environmental Impacts of Energy Generation, Distribution and Use

### Range Management Practices to Reduce Wind Turbine Impacts on Burrowing Owls and Other Raptors in the East Bay Regional Parks

**Contract #:** 500-01-032

**Contractor:** East Bay Regional Park District (EBRPD)

**Contract Amount:** \$380,000

**Contractor Project Manager:** Joe DiDonato

**Commission Project Manager:** Linda Spiegel

**Commission Contract Manager:** Linda Spiegel

#### The Issue

The East Bay Regional Park District (EBRPD) recently acquired a 617-acre property (the Souza parcel) in the Altamont Pass Wind Resource Area (APWRA). This property includes privately owned wind turbines, which operate under a lease. Adjacent to the Souza parcel is a 775-acre property also managed by EBRPD. The latter property is known as *Vasco Caves*, and is devoid of wind turbines. The EBRPD's properties in the APWRA support nesting and foraging raptors, including burrowing owls, golden eagles, falcons and other sensitive species. Operation of wind turbines and associated infrastructure in the APWRA is known to cause raptor mortalities, through collisions. These mortalities are a concern, both because of their impact on raptor populations in the area and because such problems can limit the capacity and use of wind power in the APWRA.



**Golden eagle flying near turbines in the APWRA**

**Picture by Joe DiDonato**

#### Project Description

This research project is investigating land management practices in relation to raptor behavior and prey distributions that may help reduce the frequency of raptor and wind turbine interactions. The study seeks to understand how vegetation management practices in the APWRA can modify raptor foraging patterns by changing the distribution of their prey—small mammals—so as to reduce and minimize bird collisions with wind turbines.

The EBRPD has been using sheep in a judicious grazing program at Vasco Caves, in an effort to promote native grassland restoration. This program has been expanded to the adjacent Souza property. The research team will implement range management practices recommended in the

California Energy Commission's Public Interest Energy Research (PIER) reports to attempt to redistribute small mammal populations away from turbines and thereby potentially reduce burrowing owl and other raptor-turbine interactions.

In addition, the team will investigate raptor flight behavior and spatial distribution over land with and without wind turbines, to determine the extent to which wind turbines affect habitat suitability and behavior patterns of birds in the APWRA. The team will characterize the influence of the study's range management practices on raptor flight patterns, small mammal burrow distributions, burrowing owl nesting patterns, and turbine-induced avian mortality by three-dimensional global information systems (GIS) models. The EBRPD will use the results from this study to assess whether turbine-induced impacts are significant, if changes can be made to reduce the impacts, and to inform repowering/lease renewal decisions.

### **PIER Program Objectives and Anticipated Benefits for California**

This project offers numerous benefits and meets the following PIER program objectives:

- **Provide environmentally sound and safe energy.** This work will potentially reduce the environmental costs associated with wind power generation by providing measures to minimize avian mortality resulting from collisions with wind turbines.
- **Provide reliable energy options.** This project could help provide California consumers with improved wind energy capacity should the avian mortality problem at the APWRA be significantly lessened.
- **Improve the energy/cost value of California's electricity.** This work will increase the variety of cost-effective tools that can be used to reduce the number of avian fatalities caused by utility structures, while minimizing loss of power generation.
- **Additional benefits:**
  - Broadening risk assessment by assessing the impact of wind turbines on burrowing owls and other raptors using range land in the APWRA.
  - Improving risk reduction by determining how land management practices can deter birds from flying near turbines; thereby reducing collisions.
  - Development of scientific reports and GIS maps to share information and improve bird-safe practices, in regard to wind farm upgrade and design.
  - Providing additional options for improved management of rangelands within wind farm areas, thereby supporting the sustainability of ranching interests.

### **Results**

A progress report detailing preliminary results will be forthcoming in January 2007.

### **Final Report**

PIER-EA staff intend to post the final report on the Energy Commission website in winter 2007 and will list the website link here.

## Contact

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